

## Abstract

The present invention relates to a state variable and parameter estimator (1) for determining state variables and parameters of a mathematical energy storage model, especially of a battery model, which calculates the state variables (Z) and the parameters (P) from operating  
5 variables ( $U_{\text{Batt}}$ ,  $I_{\text{Batt}}$ ,  $T_{\text{Batt}}$ ) of an energy storage device (3). A particularly simple estimation of the state variables and the parameters may be carried out if the state variable and parameter estimator (1) includes a plurality of mathematical submodels (4, 5) which are valid for different working ranges and/or frequency ranges of the energy storage device (3).

Figure 3a